

Art Unit 2627
Serial No.: 10/816,158

Reply to Office Action of: 10/03/2006
Attorney Docket No.: K35R1875

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include changes to Figs. 1-5 and 7-10 and a new Fig. 11. Fig. 11 illustrates a feature of second layer 355 of the ferromagnetic pinning structure 350 that was claimed in Claim 11 and described in the specification at paragraph [0050] of the specification as originally filed. The remaining changes, shown in corresponding annotated sheets, make corrections to the reference numerals. Reference numerals extending over multiple lines of text have been amended to lie on the same horizontal line. Reference numerals not used to refer to the corresponding to the elements described in the text have been corrected either by correcting the numeral or repositioning the line connecting the reference numeral to the associated element. Lastly, reference numerals not used in the description as amended have been removed. No new matter has been added by any of these amendments.

Attachments: Replacement Sheets
New Sheet
Annotated Sheets Showing Corrections

JAN 31 2007

018/034

2007 01/31 WED 13:02 FAX 949 672 6626

Art Unit 2627
Serial No.: 10/816,158Reply to Office Action of: 10/03/2006
Attorney Docket No.: K35R1875REMARKSSTATUS OF THE CLAIMS:

Applicant acknowledges the Examiner's withdrawal of Claims 11-23, 26-27, 31, 33, and 36-37 as being directed to non-elected species with no allowable generic claim in response to Applicant's election without traverse. Claims 1-11, 24-25, 28-30, 32, and 34-35 are pending and not withdrawn, the restriction requirement with respect to Claim 11 having been withdrawn on account of the allowability of Claim 1. In this response, Applicant cancels Claims 12-23, 25 and 27 without prejudice or disclaimer and adds new Claim 38, which is dependent on Claim 24, and Claim 39, which is dependent on independent Claim 35.

ALLOWABLE SUBJECT MATTER

Applicant notes with appreciation the Examiner's indication that Claims 1-11 are allowable over the art of record and that Claim 35 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

SUMMARY OF REJECTIONS AND OBJECTIONS:

The Examiner objects to the specification and drawings because of various informalities. In particular, the Examiner cited the following objections: (1) certain reference numerals (162, 245, 251, 280, 290, 370, 377, 382, and 390) shown in the drawings were not used in the description; (2) certain reference numerals (178, 278, 430, 472) were used in a manner inconsistent with the disclosure; (3) certain features of Claim 11 were not illustrated in the figures; (4) the title of the application is not descriptive; and (5) "210" was erroneously written as "21o" in paragraph [0041].

Claims 24, 25, 28, 30 and 32 stand rejected under 35 USC 102(b) as being anticipated by U.S. Pat. No. 6,466,419 issued to Mao (*Mao*). Claims 24, 28 and 29 are also rejected under 35 USC 102(b) as being anticipated by U.S. Patent Application Publication 2002/0167767 filed by Jayasekara (*Jayasekara*). Claim 34 is rejected under

Page 14 of 19

Art Unit 2627
Serial No.: 10/816,158

Reply to Office Action of: 10/03/2006
Attorney Docket No.: K35R1875

35 USC 102(b) as being anticipated by U.S. Patent Application Publication 2002/0024781 filed by Ooshima *et al.* (Ooshima). Applicant respectfully traverses all rejections and objections.

RESPONSE TO OBJECTIONS TO THE SPECIFICATION AND DRAWINGS:

Applicant has addressed the Examiner's objections with respect to the reference numerals as follows. The specification has been amended to include references to the drawing elements identified by reference numerals 162, 245, 251, 280, and 382. Regarding reference numerals 162, 245 and 280, the reference numerals were inadvertently omitted from the description; appropriate correction has been made. Regarding reference numeral 251, the description of the identified element, which corresponds to element 351 of Fig. 9 (see paragraph [0048] of the specification as originally filed), was inadvertently omitted. This omission has been corrected. Reference numeral 382 was also inadvertently omitted from the description in addition to being drawn to the wrong set of dots in the drawings. Both errors have been corrected. Reference numerals 290, 370, 377, and 390 were unused in the description, and they have been removed from the drawings, along with the instances of reference numerals 430 and 472 drawn to the wrong elements. The drawings have also been amended to have reference numeral 278 in Fig. 8 drawn to the correct element and to correct the inadvertent use of "178" in place of "478" in Fig. 10.

Turning to the other objections, Applicant has added new Figure 11 to illustrate the feature claimed in Claim 11 and described in the specification at paragraph [0050] as originally filed. Applicant has amended the title of the application to be "FERROMAGNETIC STRUCTURE INCLUDING A FIRST SECTION SEPARATED FROM A FERROMAGNETIC LAYER BY AN ELECTRICALLY CONDUCTIVE NONMAGNETIC SPACER AND A SECOND SECTION ELONGATED RELATIVE TO THE FIRST SECTION IN AT LEAST ONE DIMENSION." Applicant respectfully submits that this title is adequately descriptive of the invention as claimed. Applicant has also corrected the typographical error in paragraph [0041]. Applicant respectfully submits that the Examiner's objections to the specification and drawings have now been fully

Art Unit 2627
Serial No.: 10/816,158

Reply to Office Action of: 10/03/2006
Attorney Docket No.: K35R1875

addressed, and Applicant respectfully requests reconsideration and withdrawal of these objections.

RESPONSE TO CLAIM REJECTIONS AND OBJECTIONS

In response to the Examiner's objection to Claim 35, Applicant has rewritten Claim 35 in independent form including all of the limitations of the base claim and any intervening claims. Applicant respectfully submits that Claim 35 is now allowable. Accordingly, Applicant respectfully requests reconsideration and allowance of Claim 35 and its new dependent Claim 39, which should be eligible for consideration despite being directed to a non-elected species on account of its dependency on Claim 35.

Independent Claim 24 has been amended to include the limitation of now-cancelled Claim 25 that the spacer layer is electrically conductive (dependent Claim 27, directed to a dielectric spacer layer, had been canceled). Claim 24, as amended, recites "a ferromagnetic structure that is separated from the ferromagnetic layer by the spacer layer ... the ferromagnetic structure having a second section that is disposed further than the first section from the spacer layer, the second section having a second magnetic moment aligned with the first magnetic moment and extending past both ends of the ferromagnetic layer and at least twice as far as the first section in the first direction." *Jayasekara* fails to disclose, teach, suggest, or describe (expressly or inherently) the use of a ferromagnetic structure in conjunction with an electrically conductive nonmagnetic spacer layer, as recited in Claim 24. In the antiferromagnetic structure of *Mao* pointed out by the Examiner, the magnetic moments of the ferromagnetic CoFe layers 164 and 168 are aligned antiparallel to one another. *Mao* therefore fails to describe, expressly or inherently, that the magnetic moments of the layers are aligned with one another, as recited in Claim 24. *Mao* also does not disclose that the layers 164 and 168 adjoin one another, as recited in Claim 38. With respect to the other art of record, *Ooshima* discloses two adjoining ferromagnetic layers 5 and 7b with the same moment, but it does not show one of the layers extending beyond *both ends* of a ferromagnetic layer that is separated from layer 7b by a spacer layer.

Art Unit 2627
Serial No.: 10/816,158

Reply to Office Action of: 10/03/2006
Attorney Docket No.: K35R1875

Applicant respectfully submits that these references, taken alone or in combination, fail to teach, suggest, disclose, or describe each and every limitation of independent Claim 24 or its dependent claims. For at least the foregoing reasons, Applicant respectfully requests reconsideration and allowance of Claim 24 and its dependent Claims still pending in this Application, including new Claim 38. If Claim 24 is allowed, Applicant respectfully requests consideration and allowance of Claims 26, 31, and 33, which depend on Claim 24 but which were withdrawn from prosecution as being directed to non-elected species without an allowable generic claim.

Independent Claim 34 recites "an electrically conductive, nonmagnetic spacer layer" and "a ferromagnetic structure that is separated from the ferromagnetic layer by the spacer layer, the ferromagnetic structure having a first section extending between two edges in the first direction such that the ends of the ferromagnetic layer are magnetically coupled to the edges of the first section." As noted with respect to Claim 24, *Jayasekara* fails to disclose, teach, suggest, or describe the combination of a ferromagnetic structure with the recited spacer layer. Both *Mao* and *Ooshima* fail to disclose, teach, suggest, or describe (expressly or inherently) "the ferromagnetic structure having a first section extending between two edges in the first direction such that the ends of the ferromagnetic layer are magnetically coupled to the edges of the first section." In *Mao*, layers 160 and 164 are antiferromagnetically coupled across the nonmagnetic spacer layer 164 (see, e.g., *Mao*, col. 5, ll. 24-29); they are not shown or described to be magnetically coupled at the respective ends and edges of those layers. Likewise, the coupling between layers 7a and 7c in *Ooshima* is described as antiferromagnetic coupling through a nonmagnetic layer 7b (see, e.g., [0124]); the layers are not described to be magnetically coupled at the respective ends or edges of the layers. In fact, the ends of layers 7a and 7c distant from the center of the magnetic element are not even shown in the figures, and end effects between these layers are not even mentioned in *Ooshima*.

Applicant respectfully submits that these references, taken alone or in combination with one another, fail to teach, suggest, disclose, or describe each and every limitation of Claim 34 and its dependent Claims. For at least the foregoing

Art Unit 2627
Serial No.: 10/816,158

Reply to Office Action of: 10/03/2006
Attorney Docket No.: K35R1875

reasons, Applicant respectfully requests reconsideration and allowance of Claim 34. Moreover, if Claim 34 is held allowable, Applicant respectfully requests consideration and allowance of Claims 36 and 37, which depend on Claim 34 but which were withdrawn from prosecution as being directed to non-elected species without an allowable generic claim.

2007 01/31 WED 13:03 FAX 949 672 6626

JAN 31 2007

023/034

Art Unit 2627
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Reply to Office Action of: 10/03/2006
Attorney Docket No.: K35R1875

CONCLUSION

In view of the foregoing amendments and/or remarks, Applicant respectfully submits that the pending claims are now in condition for allowance. If it is believed that a telephone conversation would expedite the prosecution of the present application, or clarify matters with regard to its allowance, the Examiner is invited to contact the undersigned attorney at the number listed below.

Applicant respectfully requests that a one-month extension of time be granted under 37 CFR 1.136(a). The Commissioner is hereby authorized to charge payment of any required fees associated with this Communication or credit any overpayment to Deposit Account No. 23-1055.

Respectfully submitted,

Date: January 31, 2007

By: 

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APPL. NO.: 10/816,158
AMENDMENT DATED: 01/31/2007
REPLY TO OFFICE ACTION DATED: 10/03/2006

ANNOTATED SHEET SHOWING CHANGES

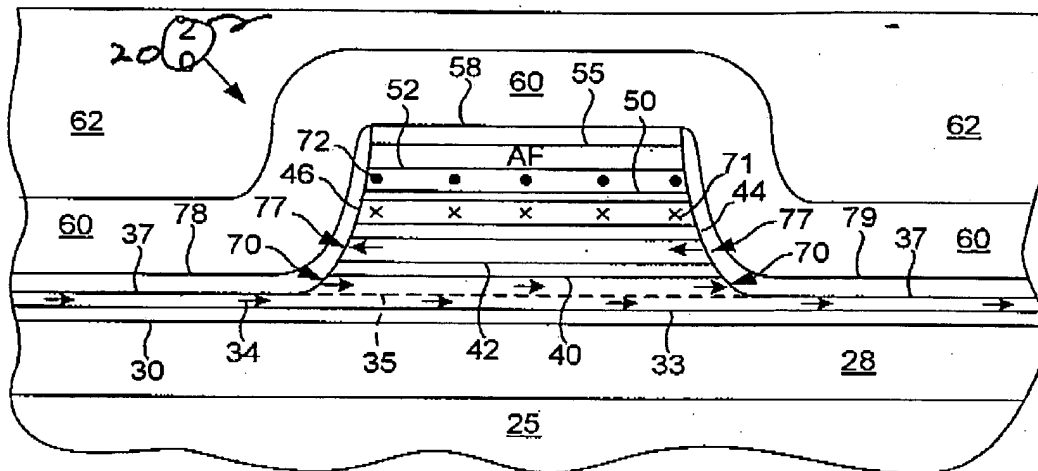


FIG. 1

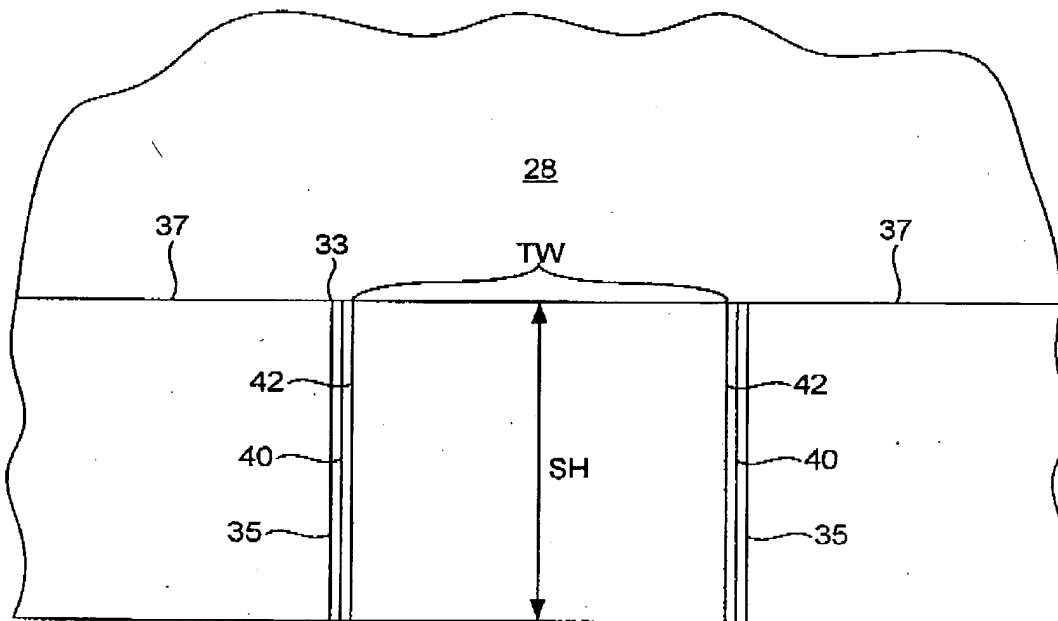
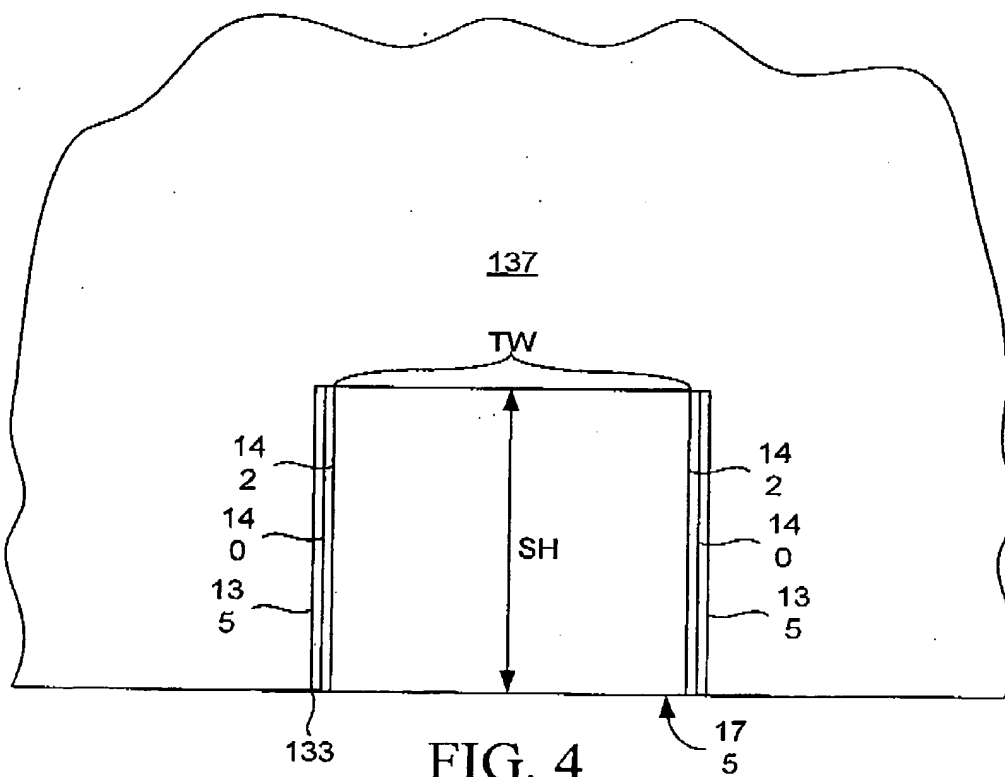
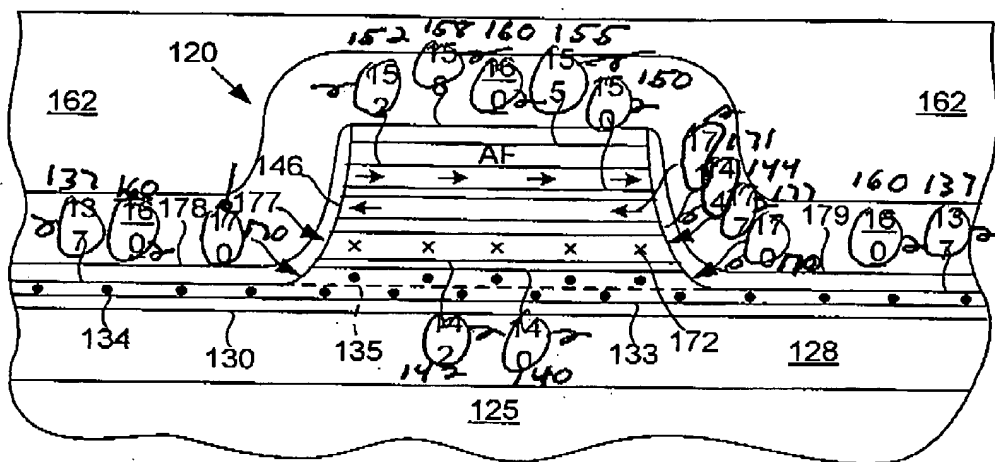


FIG. 2

APPL. NO.: 10/816,158
AMENDMENT DATED: 01/31/2007
REPLY TO OFFICE ACTION DATED: 10/03/2006

ANNOTATED SHEET SHOWING CHANGES

APPL. NO.: 10/816,158
 AMENDMENT DATED: 01/31/2007
 REPLY TO OFFICE ACTION DATED: 10/03/2006

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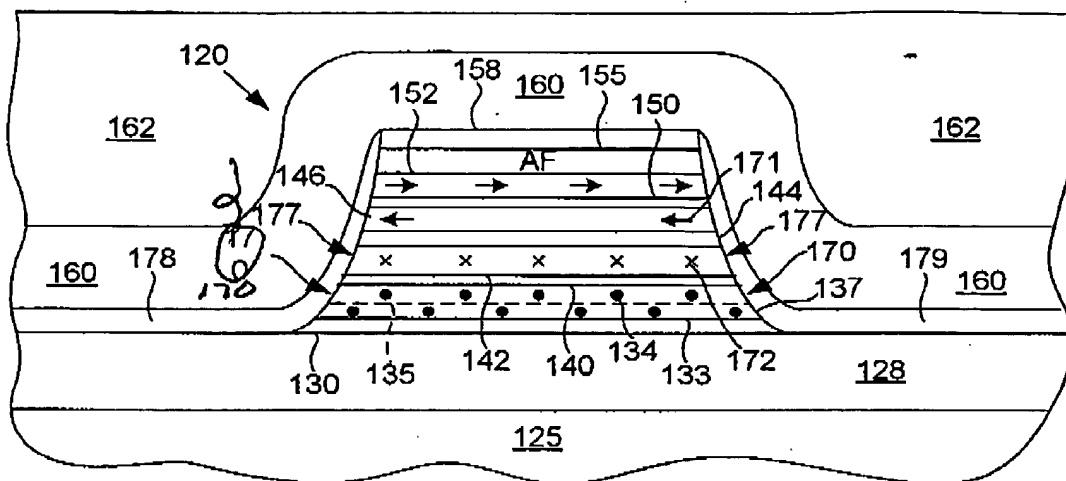


FIG. 5

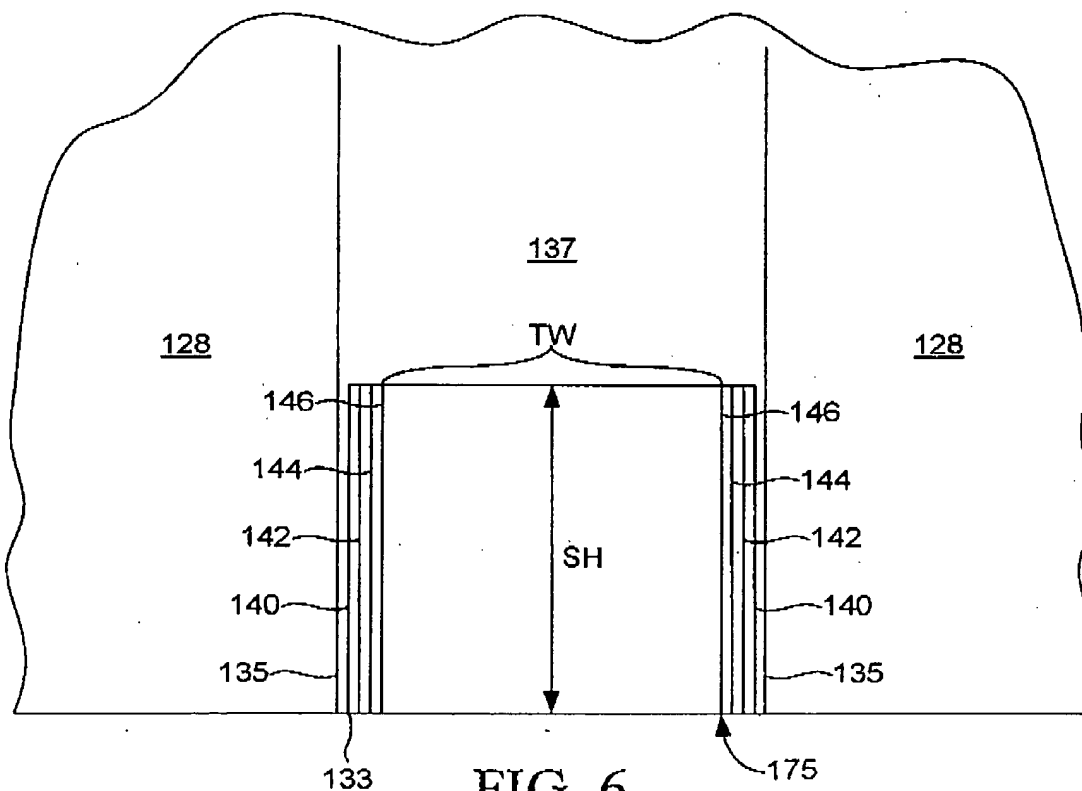


FIG. 6

APPL. NO.: 10/816,158
 AMENDMENT DATED: 01/31/2007
 REPLY TO OFFICE ACTION DATED: 10/03/2006
 ANNOTATED SHEET SHOWING CHANGES

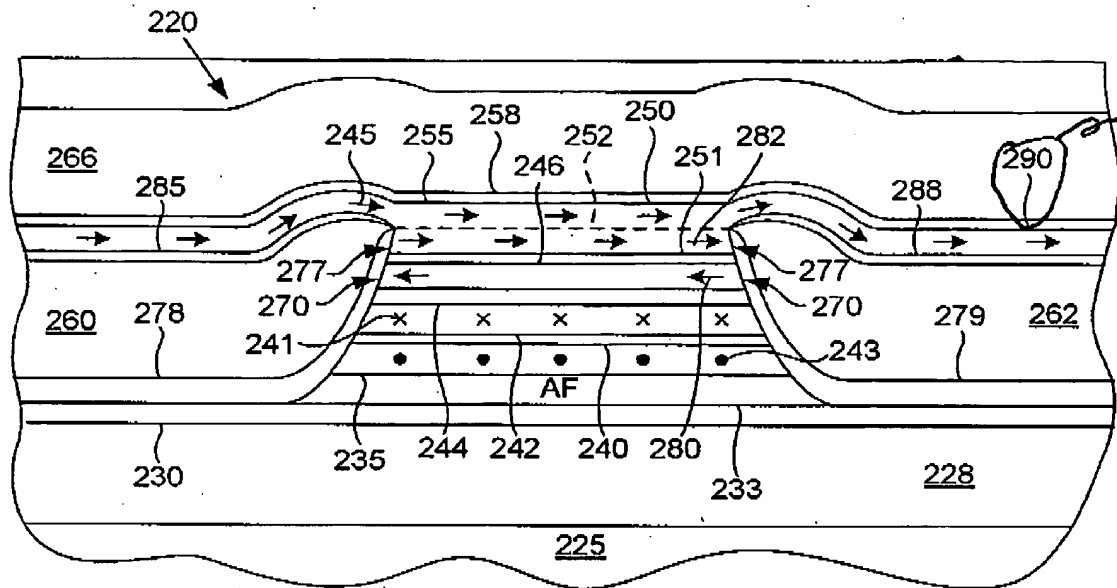


FIG. 7

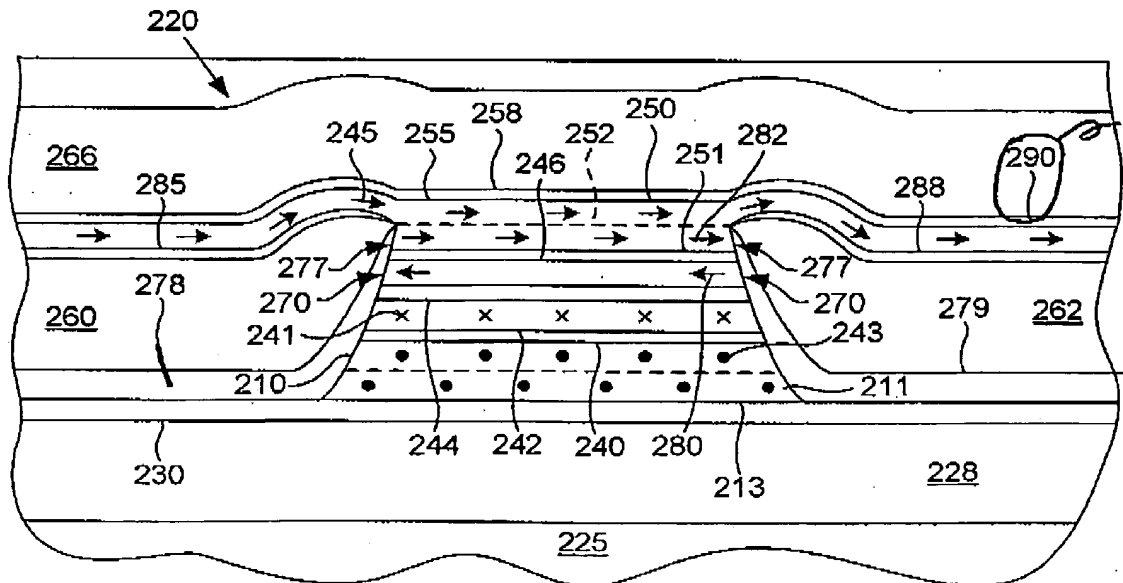


FIG. 8

APPL. NO.: 10/816,158
AMENDMENT DATED: 01/31/2007
REPLY TO OFFICE ACTION DATED: 10/03/2006

ANNOTATED SHEET SHOWING CHANGES